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Evidence of xenoestrogens in fishes from Rocky Mountain National Park, CO

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Airborne contaminants have been detected in alpine aquatic ecosystems and fish in Canada and Europe. However, little information exists for similar occurrence in the U.S. despite the preferential deposition of some airborne contaminants to high-elevation ecosystems. Therefore a multidisciplinary study was initiated to determine levels and potential effects of contaminants in western U.S. national parks. Sampling sites range from southern California to arctic Alaska, from 427 m to more than 3,020 m, and represent as near-pristine conditions as potentially found in the world. In the summer of 2003, salmonid fishes from lakes in Sequoia, Rocky Mountain, and Olympic National Parks were captured and assessed for endocrine disruption, physiological impairment, and, in some lakes, contaminant loads. Additionally, general health, histological changes, age, and sex steroids were also determined. Fish age ranged from one to 10 years. All fish appeared healthy based on macroscopic examination. Microgram per milliliter concentrations of plasma vitellogenin, a biomarker for xenoestrogen exposure, were detected in 30-50% of male and immature female fishes captured at Rocky Mountain National Park, one of these fish appeared to be hermaphroditic, and estrogen-like anthropogenic compounds were found in concentrations ranging from 10's to 1000's ng/g lipid in these fishes. Physiological impairment was assessed by quantifying melano-macrophage aggregates and indicates that fish from Sequoia National Park may also be impacted by contaminants. Fishes were also sampled in the summer of 2004 from lakes in three Alaskan National Parks and will be discussed if data are available.